

WHAT IS CLAIMED IS:

1. A disk-like recording medium for concentrically recording auxiliary information of a disk in a second area other than a first area for recording contents data of said disk by a predetermined code comprising:

n blocks each obtained by dividing said second area into n equal parts in a circumferential direction; and

m frames each obtained by dividing said block into m equal parts in the circumferential direction;

wherein said auxiliary information is arranged in said frames in such a manner as to be at equal intervals in the circumferential direction, and a synchronization signal is disposed in each of said frames.

2. A disk-like recording medium as claimed in claim 1 wherein in one of said frames, k channel bits are arranged at intervals obtained by dividing said frame into k equal parts.

3. A disk-like recording medium as claimed in claim 1 wherein said auxiliary information is modulated by a modulation method capable of word synchronization or bit synchronization.

4. A disk-like recording medium as claimed in claim 3 wherein said modulation method is a phase encoding method or a 4-1 modulation method.

5. A disk-like recording medium as claimed in claim 1 wherein, when a value of said m is two or more, the number of kinds of said synchronization signals is two or more and m or less.

6. A disk-like recording medium as claimed in claim 1 wherein an error correction code is added to said auxiliary information.

7. A disk-like recording medium as claimed in claim 1 wherein identical data is disposed in each of said n blocks.

8. A disk recording apparatus for recording auxiliary information of a disk concentrically over a plurality of tracks in a second area other than a first area for recording contents data of said disk by a predetermined code comprising:

rotating means for rotating said disk;

generating means for generating a channel clock corresponding to an interval obtained by dividing one frame into k equal parts where n blocks each having a length obtained by dividing said second area into n equal parts in a circumferential direction are generated and m frames each having a length obtained by dividing one of the blocks into m equal parts in the circumferential direction are generated, the channel clock being required

for recording said auxiliary information;

control means for controlling rotation of said disk so that one rotation of said disk is in synchronism with a cycle of $n \times m \times k$ channel clocks;

modulating means for modulating said auxiliary information on the basis of said channel clock generated by said generating means; and

recording means for recording said auxiliary information modulated by said modulating means on said disk.

9. A disk recording method for a disk recording apparatus for recording auxiliary information of a disk concentrically over a plurality of tracks in a second area other than a first area for recording contents data of said disk by a predetermined code comprising:

a rotating step for rotating said disk;

a generating step for generating a channel clock corresponding to an interval obtained by dividing one frame into k equal parts where n blocks each having a length obtained by dividing said second area into n equal parts in a circumferential direction are generated and m frames each having a length obtained by dividing one of the blocks into m equal parts in the circumferential direction are generated, the channel clock being required

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for recording said auxiliary information;

a control step for controlling rotation of said disk so that one rotation of said disk is in synchronism with a cycle of $n \times m \times k$ channel clocks;

a modulating step for modulating said auxiliary information on the basis of said channel clock generated by processing of said generating step; and

a recording step for recording said auxiliary information modulated by processing of said modulating step on said disk.

10. A disk playback apparatus for playing back a disk on which auxiliary information of said disk is recorded by a predetermined code concentrically over a plurality of tracks in a second area other than a first area, in which contents data is recorded, on the basis of channel bits having intervals obtained by dividing one frame into k equal parts where n blocks each having a length obtained by dividing said second area into n equal parts in a circumferential direction are generated and m frames each having a length obtained by dividing one of the blocks into m equal parts in the circumferential direction are generated, said disk playback apparatus characterized by comprising:

rotating means for rotating said disk at a constant

angular velocity;

playback means for playing back said disk;

generating means for generating a clock having a frequency twice $n \times m \times k$ or higher; and

demodulating means for sampling a signal outputted by said playback means on the basis of said clock generated by said generating means and demodulating said channel bits, or words while correcting said channel bits, or the words.

11. A disk playback apparatus as claimed in claim 10, further comprising correcting means for making error correction on the basis of an error correction code included in said auxiliary information and determining correct auxiliary information by majority rule.

12. A disk playback apparatus as claimed in claim 11 wherein said correcting means makes error correction on auxiliary information obtained by collecting portions determined by majority rule.

13. A disk playback method for a disk playback apparatus for playing back a disk on which auxiliary information of said disk is recorded by a predetermined code concentrically over a plurality of tracks in a second area other than a first area, in which contents data is recorded, on the basis of channel bits having

intervals obtained by dividing one frame into k equal parts where n blocks each having a length obtained by dividing said second area into n equal parts in a circumferential direction are generated and m frames each having a length obtained by dividing one of the blocks into m equal parts in the circumferential direction are generated comprising:

a rotating step for rotating said disk at a constant angular velocity;

a playback step for playing back said disk;

a generating step for generating a clock having a frequency twice $n \times m \times k$ or higher; and

a demodulating step for sampling a signal outputted by processing of said playback step on the basis of said clock generated by processing of said generating step and demodulating said channel bits, or words while correcting said channel bits, or the words.